

## REMARKS

Claims 9-17 are pending in this application.

The Examiner's reconsideration of the rejection is respectfully requested in view of the following remarks.

### Rejections Under 35 U.S.C. § 103:

Claims 9, 10, 15 and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent to Rha (6,127,241) in view of the U.S. Patent to Yu (5,801,083) and U.S. Patent to Moore (6,051,480). The rejection is respectfully traversed.

Applicants respectfully submit that neither Rha, Yu, Moore, nor any combination thereof teaches or suggests *partially etching the hardened and densified silicon oxide liner formed under the first buried layer of silicon oxide during recessing an upper surface of the first buried layer by etching*, as essentially recited in claim 9.

The Examiner acknowledges that Rha does not disclose a first buried layer of silicon oxide layer. To overcome this and argue obviousness, the Examiner contends that "The prior art of Rha discloses the first buried layer (36) that is amorphous carbon. The deficiency of Rha is cured by a secondary reference of Moore, wherein Moore discloses a silicon oxide liner (50) and a first buried layer of silicon oxide (60)".

Applicants respectfully disagree with this analysis. The deficiency of Rha cannot be cured by the first buried layer of silicon oxide (60) of Moore, because Rha expressly teaches away from using silicon oxide as a first buried layer. Rha states at col.1 that "As shown in FIG. 1C, a layer of amorphous SiO<sub>2</sub> ...15 is deposited by CVD onto the conformal oxide film 14 and within each of the trenches 13" and at col. 2 "...methods of

fabricating trench isolation structures, as typified by the method described above, are not without drawbacks...An object of the invention is to provide a trench isolation structure in which a gas, rather than a solid, is used as the dielectric within the trench". [Emphasis added]. See col. 1, line 59 through col. 2 line 23 of Rha. Accordingly, one of ordinary skill in the art would not look to modify Rha and form a first buried layer of silicon oxide.

It then follows that the silicon oxide layer (35) of Rha is not etched when the first buried layer (36) of amorphous carbon is etched because the first buried layer (36), i.e. the amorphous carbon, of Rha is formed of a material different from the silicon oxide layer (35).

Yu does not cure the deficiency of Rha and Moore.

Accordingly, Applicants respectfully submit that neither Rha, Yu, Moore, nor any combination thereof teaches or suggests any benefits to be had by *partially etching the hardened and densified silicon oxide liner formed under the first buried layer of silicon oxide during recessing an upper surface of the first buried layer by etching*, as clearly recited in claim 9.

Thus, claim 9 is not rendered obvious by the notional combination of Rha in view of Yu and Moore as suggested by the Examiner based on the present invention.

Claims 10, 15 and 16 depend from claim 9. The dependent claims are believed to be allowable due to their dependency on the allowable base claim 9.

Accordingly, the Applicant respectfully requests that the Examiner withdraw the rejection of claims 9, 10, 15 and 16 under 35 U.S.C § 103(a) and that claims 9, 10, 15 and 16 are in condition for allowance.

Claim 11 stands rejected under 35 U.S.C § 102(b) as being unpatentable over Rha in view of Yu as applied to claim 9, in further view of U.S. Patent to Oh (6,187,651).

As discussed above, Rha and Yu do not teach or suggest any benefits to be had by partially etching the hardened and densified silicon oxide liner formed under the first buried layer of silicon oxide during recessing an upper surface of the first buried layer by etching, as essentially claimed in amended claim 9. Oh does not cure the deficiency of Rha and Yu. Based on the above, independent claim 9 is patentable over Rha in view of Yu and Oh. Since claim 11 depends from claim 9, claim 11 is also patentable.

Claims 12-14 stand rejected under 35 U.S.C § 103(a) as being unpatentable over Rha in view of Yu as applied to claim 9, in further view of U.S. Patent to Zheng (5,728,621) and Fukuyama (5,770,260).

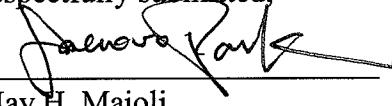
As discussed above, Rha and Yu do not teach or suggest any benefits to be had by partially etching the hardened and densified silicon oxide liner formed under the first buried layer of silicon oxide during recessing an upper surface of the first buried layer by etching, as essentially claimed in claim 9. Zheng, which is only directed to forming a layer of high density plasma oxide (HDP) by chemical vapor deposition (CVD), does not cure the deficiency of Rha and Yu. Furthermore, Fukuyama, which is only directed to a process for forming a silicon dioxide film, does not cure the deficiency of Rha, Yu and Zheng. Based on the above, independent claim 9 is patentable over Rha in view of Yu, Zheng and Fukuyama. Since claims 12-14 depend from claim 9, claims 12-14 are also patentable.

For the foregoing reasons, the present application is believed to be in condition for allowance. The Examiner's early and favorable action is respectfully requested. The

Examiner is invited to contact the undersigned if he has any questions or comments in this matter.

Respectfully submitted,

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